Anaspida

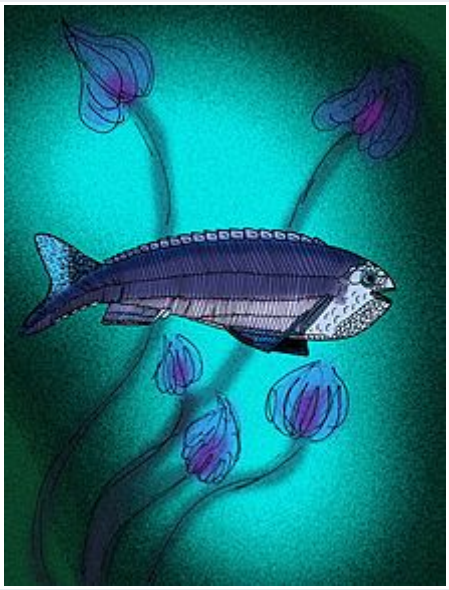
Anaspida ("without shield") is an extinct group of primitive jawless vertebrates that lived primarily during the Silurian period, and became extinct soon after the start of the Devonian.[2] They were classically regarded as the ancestors of lampreys.[3] Anaspids were small marine agnathans that lacked a heavy bony shield and paired fins, but have a striking highly hypocercal tail. They first appeared in the early Silurian, and flourished until the early Devonian, when they disappear from the fossil record.

Anaspida

Temporal range: 444–419 Ma

Pre€ € O S D C P T J K PgN

early Silurian - Early Devonian



Cowielepis

Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Subphylum:	Vertebrata
Class:	†Anaspida Traquair, 1899

Orders

- Endeiolepidiformes
- Birkeniiformes

Synonyms

- Anaspidi
- Birkeniae

Contents

- Anatomy
- Taxonomy
- Notes
- External links

Anatomy

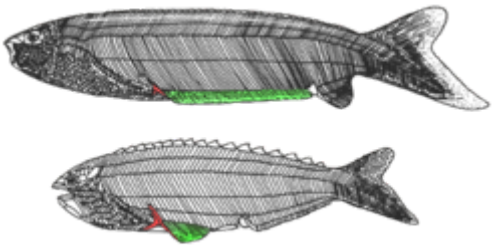
Compared to other prehistoric agnathan groups, such as the Heterostraci and Osteostraci, anaspids did not possess a bony shield or armor, hence their name. The anaspid head and body are instead covered in an array of small, weakly mineralized scales, with a row of massive scutes running down the back, and, at least confirmed among the birkeniids, the body was covered in rows of tile-like scales made of aspidine, an acellular bony tissue.[4] Anaspids all had prominent, laterally placed eyes with no sclerotic ring, with the gills opened as a row of holes along either side of the animal, typically numbering anywhere from 6-15 pairs. The major synapomorphy for the anaspids is the large, tri-radiate spine behind the series of the gill openings.[1]

Taxonomy

Now that *Jamoytius* and its close cohorts, i.e., *Euphanerops*, have been moved to Jamoytiiformes,[5] Class Anaspida now consists of two orders, the monogeneric Lasaniida, which contains the genus *Lasanius* and represents a basal anaspid group,[6] and Birkeniida, which contains all other recognized anaspid taxa.[7] Birkeniida is further divided into several families, including Birkeniidae, Pterygolepididae, Rhyncholepididae and Pharyngolepididae, which contain those taxa known from whole body fossils (in addition to several taxa known only from scales) and the family Septentrioniidae, whose subtaxa are known exclusively from scales.[7]

Two recently described genera, *Kerreralepis*[6] and *Cowielepis*,[8] are considered to be Birkeniida *incertae sedis*.

A newer taxonomy based on the work of Mikko's Phylogeny Archive,[9] Nelson, Grande and Wilson 2016[10] and van der Laan 2018.[11]



Anaspids are characterized by a large, tri-radiate spine (red) posteriorly to the series of branchial openings. Typical anaspids are restricted to the Silurian but some doubtful forms occur in the Late Devonian. It is assumed that the most primitive anaspids, such as *Pharyngolepis* (top), possessed a long, ribbon-shaped, ventrolateral fin-fold (green). More advanced forms, such as *Rhyncholepis* (bottom), possessed a shorter paired fin-fold (green) and enlarged, spine-shaped, median dorsal scutes. – Philippe Janvier[1]

- **Class** †**Anaspida** Janvier 1996 non Williston 1917
  - **Order** †**Endeiolepidiformes** Berg 1940
    - **Family** †**Endeiolepididae** Stensiö 1939 corrig.
      - Genus †*Endeiolepis* Stensiö 1939
  - **Order** †**Birkeniiformes** Berg 1940
    - Genus †*Cowielepis* Blom 2008
    - Genus †*Hoburgilepis* Blom, Märss & Miller 2002
    - Genus †*Kerreralepis* Blom 2012
    - Genus †*Maurylepis* Blom, Märss & Miller 2002
    - Genus †*Rytidolepis* Pander 1856
    - Genus †*Schidiosteus* Pander 1856
    - Genus †*Silmalepis* Blom, Märss & Miller 2002
    - Genus †*Vesikulepis* Blom, Märss & Miller 2002
    - **Family** †**Pharyngolepididae** Kiær 1924 corrig.
      - Genus †*Pharyngolepis* Kiaer 1911
    - **Family** †**Pterygolepididae** Obručhev 1964 corrig.
      - Genus †*Pterygolepis* Cossmann 1920 [*Pterolepis* Kiaer 1911 non Rambur 1838 non De Candolle ex Miquel 1840; *Pterolepidops* Fowler 1947]
    - **Family** †**Rhyncholepididae** Kiær 1924 corrig.
      - Genus †*Rhyncholepis* Kiær 1911 non Miquel 1843 non Nuttall 1841
    - **Family** †**Tahulalepididae** Blom, Märss & Miller 2002
      - Genus †*Tahulalepis* Blom, Märss & Miller 2002
      - Genus †*Trimpleylepis* Miller, Märss & Blom 2004
    - **Family** †**Lasaniidae** Goodrich 1909
      - Genus †*Lasanius* Traquair 1898
    - **Family** †**Ramsaasalepididae** Blom, Märss & Miller 2003
      - Genus †*Ramsaasalepis* Blom, Märss & Miller 2003
    - **Family** †**Birkeniidae** Traquair 1899
      - Genus ?†*Vilkitskilepis* Märss 2002
      - Genus †*Ctenopleuron* Matthew 1907
      - Genus †*Saarolepis* Robertson 1945 [*Anaspis* Robertson 1941 non Geoffroy 1762 non Thomson 1893]
      - Genus †*Birkenia* Traquair 1898
    - **Family** †**Septentrioniidae** Blom, Märss & Miller 2002

- Genus †*Liivilepis* Blom, Märss & Miller 2002
- Genus †*Manbrookia* Blom, Märss & Miller 2002
- Genus †*Ruhnulepis* Blom, Märss & Miller 2002
- Genus †*Spokoinolepis* Blom, Märss & Miller 2002
- Genus †*Septentrionia* Blom, Märss & Miller 2002

Notes

Life reconstruction of *Lasanius problematicus*

1. Janvier, Philippe (1997) Anaspida (http://tolweb.org/Anaspida/14837) *The Tree of Life Web Project*.
2. Ahlberg, Per Erik (2001). *Major events in early vertebrate evolution: palaeontology, phylogeny, genetics, and development* (https://books.google.com/books?id=zeyRZNZl-74C&pg=PA188). Washington, DC: Taylor & Francis. p. 188. ISBN 0-415-23370-4.
3. Patterson, Colin (1987). *Molecules and morphology in evolution: conflict or compromise?* (https://books.google.com/books?id=DL_KQPX3AmIC&pg=PA142). Cambridge, UK: Cambridge University Press. p. 142. ISBN 0-521-32271-5.
4. Janvier, Philippe (2003). *Early Vertebrates*. Oxford University Press. ISBN 978-0-19-852646-9.
5. Sansom, Robert S., et al. "Taphonomy and affinity of an enigmatic Silurian vertebrate, Jamoytius kerwoodi White." Palaeontology 53.6 (2010): 1393-1409.
6. Blom, Henning. "New birkeniid anaspid from the Lower Devonian of Scotland and its phylogenetic implications." Palaeontology 55.3 (2012): 641-652.
7. Blom, Henning, T. Märss, and C. G. Miller. "Silurian and earliest Devonian birkeniid anaspids from the Northern Hemisphere." Earth and Environmental Science Transactions of the Royal Society of Edinburgh 92.03 (2001): 263-323.
8. Blom, Henning. "A new anaspid fish from the Middle Silurian Cowie Harbour fish bed of Stonehaven, Scotland." Journal of Vertebrate Paleontology 28.3 (2008): 594-600.
9. Haaramo, Mikko (2003). "†Anaspida – anaspids" (http://www.helsinki.fi/~mhaaramo/metazoa/deuterostoma/chordata/agnatha/anaspida_1.html). *in Mikko's Phylogeny Archive*. Retrieved November 25, 2018.
10. Nelson, Joseph S.; Grande, Terry C.; Wilson, Mark V. H. (2016). Fishes of the World (5th ed.). John Wiley & Sons. ISBN 9781118342336.
11. van der Laan, Richard (2018). "*Family-group names of fossil fishes*" (https://www.researchgate.net/publication/328277664_Family-group_names_of_fossil_fishes).

External links

- "The Anaspida - unarmoured "ostracoderms" " (http://palaeos.com/vertebrates/anaspida/anaspida.html). *Palaeos: Life Through Deep Time*. Retrieved 2012-11-24.
- Monroe M. H. "Anaspida "no shield" " (http://austhrutime.com/anaspida.htm). *Australia: The Land Where Time Began*. Retrieved 2012-11-24.

Retrieved from "https://en.wikipedia.org/w/index.php?title=Anaspida&oldid=963639299"

This page was last edited on 20 June 2020, at 23:05 (UTC).

Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the Terms of Use and Privacy Policy. Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.